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# Intraoperative Quick Parathyroid Hormone Assay during Total Parathyroidectomy with Autotransplantation in Patients on Dialysis

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**Purpose :** Intraoperative quick parathyroid hormone (ioPTH) monitoring has become a valuable tool in surgery for primary hyperparathyroidism, but the value of ioPTH measurement in renal hyperparathyroidism is still unclear. The aim of this study was to evaluate ioPTH as a marker to predict the short-term (<2 year) postoperative iPTH values in patients on dialysis.

**Methods :** We did total parathyroidectomy with immediate autotransplantation with ioPTH in thirteen patients on dialysis diagnosed as the uncontrolled secondary hyperparathyroidism from November 2003 to September 2005. We measured ioPTH levels at three point time; baseline (the induction of anesthesia) and 20-minute intervals after excision of the fourth parathyroid gland, using biotinylated monoclonal Ab reacting with N-terminal fragment (1-37) and monoclonal Ab labeled with ruthenium complex reacting with C-terminal fragment (38-84) by Elecsys® 2010. We checked iPTH level at 3-, 6-, 12-, 18- and 24 month. "Too Excess" was defined as iPTH level below 100 pg/mL after 12 month, while "Unsatisfactory" as iPTH above 500 pg/mL within 6 month and not decreasing. "Satisfactory" was defined in between above two levels.

**Results :** Preoperative mean PTH, calcium, phosphate and alkaline phosphatase levels of thirteen patients were 1,435.8±639.6 pg/mL, 10.8±0.9 mg/dL, 6.0±1.0 mg/dL, and 221.8±148.5 IU/L respectively. Median postoperative follow up period was 14 months (6-26 mos). Postoperative iPTH of seven patients showed "Too Excess", a mean 93.3±2.0% (90.4-96.9%) reduction in ioPTH. Two patients showed "Unsatisfactory", 61.8% and 80.5% reduction, respectively, in ioPTH. The other four patients was "Satisfactory", a mean 85.6±5.4% reduction in ioPTH.

**Conclusion :** Intraoperative quick PTH assay may be helpful in the management of renal hyperparathyroidism undergoing parathyroidectomy. We suggested that ioPTH reduction more than 90% increased the risk of adynamic bone condition, while ioPTH reduction less than 80% increased the risk of "unsatisfactory" outcome. The target reduction of ioPTH concerning the postoperative change of iPTH remains to be proven in further studies.